

GHG Assessment for CEQA Purposes: Informal Guidance for Water Related Issues

California Department of Water Resources CEQA Climate Change Committee

Introduction and Use of this Document

The following information does not impose any additional requirement on projects beyond that contained in the CEQA guidelines rather, this document is intended to assist agencies in complying with the current CEQA / greenhouse gas (GHG) analysis requirements. It is important to note that not all projects are subject to CEQA. DWR recommends that lead agencies consult legal counsel to determine which regulations apply to their specific project. The guidance in this document applies specifically to projects that are subject to CEQA.

This document provides information about GHG analysis for CEQA purposes and discusses several potential sources of emissions associated with water transfer, exchange, or sale agreements. Not all potential sources of emissions will apply to all projects. DWR is providing this information to assist water users. No analysis described in this document is required by DWR. Although some parts of this guidance, especially the section on developing an inventory and calculating GHG emissions, focus on water transfers, exchanges or sales, most of it is applicable to any project involving a new or changed water use.

General Background Information

Global climate change is becoming an increasingly important and challenging part of CEQA analyses. CEQA generally requires public agencies to review the environmental impacts of proposed projects, and, if those impacts are determined to be significant, to consider feasible alternatives and mitigation measures that would substantially reduce significant adverse environmental effects. (See Pub. Resources Code, § 21002.) In 2007, the California Legislature recognized the need for guidance on the analysis of climate change for CEQA compliance, and with SB 97¹, directed the Natural Resources Agency, in coordination with the Governor's Office of Planning and Research, to address the issues through amendments to the CEQA Guidelines. As a result of SB 97, CEQA Guidelines amendments were adopted to provide direction to lead agencies for evaluating, quantifying, and mitigating a project's potential GHG emissions. The CEQA Guidelines may be found at: <http://www.ceres.ca.gov/ceqa/guidelines/>.

While this document provides information for project proponents implementing the CEQA Guidelines with respect to GHG emissions, some CEQA projects may also warrant an

¹ Senate Bill 97, Chapter 185, Statutes of 2007, codified at Pub. Resources Code, § 21083.05.

analysis of the potential impacts of expected climate change on the project. Adequate consideration of the effects of climate change is challenging due to the spatial and temporal scales upon which changes occur. In addition, scientific understanding of the effects of climate change is evolving rapidly. Lead agencies are encouraged to research and develop their own methodologies for determining if a climate change analysis should be done and how to complete that analysis.

Each project is unique and may involve GHG emissions from multiple sources including construction, operation, and maintenance. In some cases it will be necessary to understand the GHG emissions under baseline conditions and how these emissions change with implementation of the proposed project. Issues such as changes in water use and land use changes are all issues that may need to be explored and analyzed to determine whether changes in GHG emissions are a significant environmental impact of the project.

Accounting for GHG Sources

The principal GHGs associated with anthropogenic emissions are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), perfluorocarbons (PFC), and hydrofluorocarbons (HFC). (Kyoto Protocol and Health & Saf. Code, § 38505, subd. (g). See also, CEQA Guidelines, § 15364.5) Each of the principal GHGs has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat trapping ability of each of these gases varies significantly from one another. CH₄ for instance, is 25 times more potent than CO₂, while SF₆ is 22,800 times more potent than CO₂². Conventionally, GHGs have been reported as carbon dioxide equivalents (CO₂e). CO₂e takes into account the relative potency of non-CO₂ GHGs and converts their quantities to an equivalent amount of CO₂ so that all emissions can be reported as a single quantity.

The primary man-made processes that release these GHGs include: 1) CO₂ emissions from burning of fossil fuels for transportation, heating and electricity generation; 2) agricultural practices that release CH₄, such as from enteric fermentation in ruminant livestock, crop residue decomposition, and manure lagoons, or of N₂O from nitrogen fertilizer use; 3) waste management, such as from landfills and anaerobic digestion of liquid wastes; and 4) industrial processes that release smaller amounts of high global warming potential gases, such as SF₆, PFCs, and HFCs. Deforestation and land cover conversion have also been identified as contributing to climate change by reducing the Earth's capacity to remove CO₂ from the air and altering the Earth's albedo or surface reflectance, allowing more solar radiation to be absorbed.

Many recent documents provide information about accounting for GHG sources. Appendix A is a list of technical references that can assist project proponents in analyzing GHG emissions from their projects. These references are specifically chosen for their relevance to CEQA; however, many other good references exist.

² Intergovernmental Panel on Climate Change. 2013. *Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013.

In general, GHG sources can be accounted for either qualitatively or quantitatively. The CEQA guidelines encourage lead agencies to quantify GHG emissions to the extent possible. In cases where lack of scientific understanding or data availability precludes a quantitative analysis, other methods of accounting for GHG emissions described under CEQA Guidelines Section 15064.4 could be employed. For example, analyses can include providing additional information on the current state of scientific understanding regarding the emission source, ongoing research, and if available, potential ranges for emission or sequestration potential.

Developing an Inventory and Calculating GHG Emissions

The first step in establishing a project level emissions inventory is to define a project boundary and identify the sources of emissions within that boundary. The boundary delimits the extent of the project as defined under CEQA. (Pub. Resources Code, § 21065.) All emissions within the boundary are attributable to the project while emissions outside of it are attributable to some other source. An appropriate project boundary and emissions inventory might include:

- Agencies' boundaries where water is currently being put to use/baseline use of the water (e.g., pumping, conveyance, pressurization, application, emissions from agricultural practices, water treatment, emissions from municipal or industrial uses, heating, cooling, operation and maintenance of facilities, etc.)
- Areas through which water will be stored or conveyed (e.g. emissions generated by moving the water through facilities) NOTE: For storage and conveyance through State Water Project facilities DWR has already analyzed and mitigated for impacts, contact CEQAclimatechange@water.ca.gov for additional information.
- Boundaries of area to which water will be moved (e.g. emissions generated by the proposed use of the water including, pumping, conveyance, pressurization, application, emissions from agricultural practices, water treatment, emissions from municipal or industrial uses, heating, cooling, growth inducing impacts if applicable, etc.)
- Any required construction related to the project.

Project proponents should give careful consideration to project boundaries so that all appropriate emissions attributable to the project are included. Several tools and methodologies for calculating GHG emissions have been developed by various entities and for various purposes. A number of these tools often work well for estimating emissions from components of the project, but often fail to comprehensively cover the whole of a "project" as defined by CEQA (Pub. Resources Code, § 21065.) A well known and widely used methodology has been developed by the World Resources Institute (WRI) and World Business Counsel for Sustainable Development. This methodology was adapted by the California Climate Action Registry (CCAR) now known as The Climate Registry (TCR) and is being used throughout North America as a consistent and transparent standard to calculate, verify and publicly report GHG emissions. Methodologies like the WRI/CCAR/TCR have been developed for inventories of individual entities (companies, agencies, or organizations). This convention may circumscribe a boundary that could be too restrictive to capture the broad range of effects and impacts needed for a CEQA

analysis. In addition to GHG accounting protocols, several GHG calculation models have also been developed. CalEEMod³, for example, was developed in collaboration with the air districts of California and provides a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from a variety of projects.

Significance Criteria and Mitigation

This section outlines criteria and thresholds that may be used to determine if GHG emissions are significant under CEQA. This information is provided to assist CEQA lead agencies in making significance determinations with regard to GHG emissions. It should not be construed as legal advice.

CEQA defines a significant effect on the environment as a “substantial, or potentially substantial, adverse change in the environment” (Pub. Resources Code, § 21068) and “the determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data.” (CEQA Guidelines, §15064, subd. (b).) The project proponents must assess the scope of the analysis required by their specific project.

Direct impacts from GHG emissions from one project, even a very large project, are miniscule in comparison to worldwide or even statewide GHG emissions. However, the emissions from each project constitute an incremental contribution to the buildup of GHGs in the atmosphere and may have a significant environmental impact when analyzed on a cumulative basis. Cumulative impacts are those resulting from the incremental impact of the project when added to other past, present, and reasonably foreseeable probable future projects. (CEQA Guidelines, §15355, subd. (b).) Therefore, the CEQA Guidelines state that analysis of the significance of GHG emissions should typically be done as a cumulative impacts analysis. (CEQA Guideline, §15130, subd. (f).)

Determining whether the GHG emissions from a project contribute to a significant cumulative impact is complex and evolving. However, a determination of “less than significant” for cumulative impacts based on a finding that a project’s contribution to the cumulative impact of GHG concentrations in the atmosphere is minute (or *de minimis*) has not withstood legal challenge. Miniscule incremental impacts cannot be ignored as *de minimis* (*Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98, 117) nor can the incremental contribution to an environmental impact of a project be trivialized because of the extent to which previous projects have impacted the environment. (*Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 719.)

The CEQA Guidelines state that a threshold of significance may be a quantitative, qualitative, or based on performance level of a particular environmental effect above which

³ <http://www.caleemod.com/>

impacts will normally be considered significant. (CEQA Guidelines, §15064.7, subd. (a).) Appendix A contains a number of published documents that provide a range of strategic guidance for determining thresholds of significance for GHG emissions.

Three basic strategies for determining a quantitative threshold have been outlined in the technical guidance documents published to date: 1) Decline to determine significance; 2) Establish a significance threshold of net-zero (e.g. any increase over baseline conditions is significant); or 3) establish a non-zero significance threshold based on compliance with the Global Warming Solutions Act of 2006 (AB 32) or other established GHG reduction strategies⁴. Each of these strategies however, has complexities associated with it.

Declining to determine significance:

Reporting emissions but declining to determine significance was used in a number of analyses in the past, but is now generally considered unacceptable in most circumstances because of the evolution of knowledge in this area. CEQA Guidelines, section §15064.4 limit the circumstances under which a project could decline to determine significance and recent case law has held that GHG impacts are not too speculative to make a significance determination.

Establishing a significance threshold of net-zero:

Establishing a threshold of net-zero i.e., any increase in GHG emissions over baseline would be considered significant, is the most conservative approach but would likely require almost all projects—even very small ones—to monitor and mitigate most or all GHG emissions from the project.

Establishing a non-zero threshold:

A non-zero threshold is a threshold that allows some increase in GHG emissions over baseline conditions. A non-zero threshold presents the difficult question of what amount of GHG emissions are less than significant and what substantial evidence can be used to support this level of emissions. In June 2008, guidance published by the Governor's Office of Planning and Research (OPR) recognized the lack of established statewide thresholds of significance for GHG emissions and stated that each CEQA lead agency should establish its own approach to analyzing climate change from projects that generate GHG emissions. At the same time, OPR asked CARB to recommend a method for setting quantitative thresholds of significance for GHGs that would encourage consistency in CEQA analyses. This effort resulted in a draft proposal in December 2008. The draft proposal elicited a wide range of comments that questioned the underlying assumptions made by CARB. As of December 2013, CARB efforts to develop statewide guidance on setting thresholds of significance are on hold. CARB's difficulty in establishing a defensible methodology highlights the complexity of defining a non-zero level of significance.

Developing Non-Zero Significance Thresholds

⁴ See *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista* (2011) 197 Cal.App.4th 327, 335.)

As discussed above, non-zero significance thresholds must identify quantitative, qualitative, or performance levels of GHG emissions above which the environmental effects would be considered significant. Substantial evidence must be used to support the threshold (CEQA Guidelines, §15064.7, subd. (c).) DWR formulated the following questions as a starting point for its own projects and provides them here to assist other CEQA lead agencies considering non-zero significance thresholds. Answers to the following questions may help lead agencies develop significance thresholds for GHG emissions for their projects as may be appropriate based on the type, size and scope of any particular project:

- Does the project implement or fund its share of a mitigation strategy designed to alleviate climate change? This might be achieved through consistency with AB 32 and the Climate Change Scoping Plan (Scoping Plan) adopted by the CARB.
- How and in what ways does the project move California toward a lower carbon future?
- How closely does the project's overall GHG emissions balance approach zero?
- Are there process improvements or efficiencies gained by implementing the project?
- Is the project inherently energy efficient? i.e., does it use newer technology, is it designed for long-term efficiency rather than short-term construction cost savings.

Project proponents may also find it useful to discuss how the project contributes to delivering vital services with the lowest possible GHG emissions.

The CEQA Guidelines state that a cumulative impact may be considered less than significant if the project implements or funds its fair share of a mitigation strategy designed to alleviate the cumulative impact. (CEQA Guidelines, §15130, subd. (a)(3).) AB 32 is the definitive state law governing the reduction of GHG emissions. Consistency with AB 32 may meet CEQA Guidelines Section 15130, subd. (a)(3), allowing projects to claim their emissions are less than significant if the project is consistent with the implementation strategies and legislative intent of AB 32.

AB 32 sets aggressive goals aimed at reducing statewide emissions to 1990 levels by 2020 and in the process is leading the country and the world forward toward a lower GHG future. CARB finalized its Scoping Plan for implementation of AB 32 in December 2008 and is currently implementing the Scoping Plan.

The Scoping Plan lays out ***six key elements designed to meet the goals of the legislation:***

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewable energy mix of 33 percent
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets

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- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation

Each of these elements is developed further with specific strategies for implementation in the CARB Scoping Plan (<http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>).

Mitigation Measures

Reduction of GHG emissions should be achieved by implementation of all technologically feasible and cost-effective measures. These measures may differ from project to project, however, a number of measures have been proposed by the California Attorney General's Office, CARB, and others (<http://oag.ca.gov/environment/ceqa/measures>).

Appendix A. Technical guidance documents for analyzing greenhouse gas emissions for CEQA

Association of Environmental Professionals. 2007. *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents*.

http://www.counties.org/images/public/Advocacy/ag_natres/AEP_Global_Climate_Change_June_29_Final%5B1%5D.pdf

California Air Pollution Control Officer Association. 2008. *CEQA and Climate Change Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*.

California Climate Action Registry. (2009). *General Reporting Protocol Version 3.1*.

http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

California Office of Planning and Research. 2008. *Technical Advisory- CEQA and Climate Change: Addressing Climate change Through California Environmental Quality Act Review*.

<http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>

Center for Biological Diversity. 2007. *The California Environmental Quality Act On the Front Lines of California's Fight Against Global Warming*.

<http://www.biologicaldiversity.org/publications/papers/CBD-CEQA-white-paper.pdf>

ICF Jones and Stokes. 2007. *Addressing Climate Change in NEPA and CEQA Documents*.

http://www.climatechangeocusgroup.com/docs/JonesAndStokesClimateChangeCeqaNepea_Aug_2007.pdf

Schussman, Barbara; Pradhan, Manu; and Marciniak, Sean (Bingham McCuthchen). 2008. *NEPA Review and Impacts on Climate Change*. CLE International, 4th Annual NEPA Super Conference, March 6 and 7, 2008, San Francisco.

<http://www.bingham.com/Media.aspx?MediaId=6641>

United States Environmental Protection Agency. 2009. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2007*.

<http://epa.gov/climatechange/emissions/downloads09/InventoryUSGhG1990-2007.pdf>

World Resources Institute and World Business Council For Sustainable Development. N.d. *The Greenhouse Gas Protocol for Project Accounting*.

http://www.ghgprotocol.org/files/ghg_project_protocol.pdf